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BITUMEN EMULSIONS FOR CONSTRUCTION AND MAINTENANCE OF PAVEMENTS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Asphalt Pavement Association Limited

Australian Gas Association

Australian Institute of Petroleum Limited

Australian Road Research Board

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Housing and Construction

Institution of Engineers, Australia

Local Government Associations

National Association of Australian State Road Authorities

This standard, prepared by Committee CH/25, Bitumen and Related Products (for Roadmaking), was approved on behalf of the Council of the Standards Association of Australia on 16 January 1981, and was published on 1 May 1981.

AUSTRALIAN STANDARD

BITUMEN EMULSIONS
FOR CONSTRUCTION AND MAINTENANCE OF PAVEMENTS

AS 1160—1981

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PREFACE

This edition of this standard was prepared by the Association's Committee on Bitumen and Related Products (for Roadmaking) under the direction of the Chemical Standards Board. It supersedes the 1976 edition.

This standard is one of a series of standards relating to material for roadmaking purposes. Other standards in the series are as follows:

AS 1507 Road Tars for Pavements
AS 2008 Residual Bitumen for Pavements
AS 2150 Asphalt (Hot-mixed)
AS 2157 Cutback Bitumen

Among the changes in this edition are:

- Determination of pH has been included.
- The requirements for bitumen and water content have been altered. The appendix for the determination of water content has been deleted in favour of AS 2341.9.
- The requirement for solubility in trichloroethylene has been replaced with a requirement for matter insoluble in toluene determined in accordance with AS 2341.8.
- For cationic aggregate mixing (CAM) grade, the balance of residue from evaporation, water content and oil content has been changed.
- Appendix A, Purchasing Guidelines, has been added in order to provide a basis for contractual matters.

This standard makes reference to the following standards:

AS 1152 Test Sieves
AS 2008 Residual Bitumen for Pavements
AS 2163 Graduated Measuring Cylinders
AS 2341 Methods of Testing Bitumen and Related Roadmaking Products
2341.2—Determination of dynamic viscosity by flow through a capillary tube
2341.3 Determination of kinematic viscosity by flow through a capillary tube
2341.4—Determination of dynamic viscosity by rotational viscometer
2342.5—Determination of apparent viscosity by 'Shell' sliding plate micro-viscometer
2341.8—Determination of matter insoluble in toluene
2341.9—Determination of water content (Dean and Stark)
ASTM D1461 Method of Test for Moisture or Volatile Distillates in Bituminous Paving Mixtures
ASTM E1 Specification for ASTM Thermometers
BS 2586 Glass Electrodes for Measurement of pH.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
BITUMEN EMULSIONS FOR CONSTRUCTION AND MAINTENANCE OF PAVEMENTS

1 SCOPE. This standard specifies requirements for anionic and cationic bitumen emulsions with a bitumen content of about 60 percent which are commonly used in the construction and maintenance of pavements.

2 DEFINITIONS. For the purpose of this standard, the following definitions apply:

Bitumen emulsion—a liquid product in which a substantial amount of bitumen (with which some oil may be mixed) is suspended in a finely divided condition in water by means of one or more emulsifying and stabilizing agents.

Anionic bitumen emulsion—a type of bitumen emulsion in which the suspended particles are negatively charged.

Cationic bitumen emulsion—a type of emulsion in which the suspended particles are positively charged.

3 TYPES AND GRADES.

3.1 Anionic Type. Grades of anionic bitumen emulsion shall be recognized in accordance with the following designations:

(a) *Rapid-setting (Grade ARS)*—an emulsion characterized by rapid breaking and suitable for sealcoat and tackcoat applications but normally unsuitable for mixing with aggregate.

(b) *Slow-setting (Grade ASS)*—an emulsion with sufficient mechanical and chemical stability for all purposes requiring mixing with aggregate, including those containing large proportions of fines or chemically active materials such as cement or hydrated lime.

This grade is also suitable for mixing with water for surface enrichment and for dust laying. It is also suitable for premixing with soil for stabilization purposes and for use in the grassing of batters.

3.2 Cationic Type. Grades of cationic bitumen emulsion shall be recognized in accordance with the following designations:

(a) *Rapid-setting (Grade CRS)*—an emulsion characterized by rapid breaking and suitable for sealcoat and tackcoat applications but normally unsuitable for mixing with aggregate.

(b) *Slow-setting (Grade CSS)*—an emulsion with sufficient mechanical and chemical stability for all purposes and requiring mixing with aggregate, including those containing large proportions of fines.

It is also suitable for premixing with soil for stablilization purposes, for surface enrichment and for dust laying.

(c) *Aggregate mixing (Grade CAM)*—an emulsion normally used for making cold mix to be stockpiled.

4 DESIGNATION. The designation of the emulsion shall include the emulsion grade as set out in Clause 3, together with the class of bitumen in the emulsion.

Examples:

(a) ASS/170
which represents—
ASS—anionic slow-setting grade emulsion
170—Class 170 residual bitumen

(b) CRS/170
which represents—
CRS—cationic rapid-setting grade emulsion
170—Class 170 residual bitumen

5 BITUMEN. The bitumen used in the manufacture of the emulsion shall comply with the requirements of AS 2008, and shall be Class 50, 170 or 320.

NOTE: The purchaser should specify the class required (see Appendix A, Paragraph A3(b)).

6 EMULSIFYING, FLUXING AND STABILIZING AGENTS. The emulsifying agent(s), flux oils and any stabilizing agent(s) etc in the product shall have no know deleterious effect on the properties of the bitumen remaining after setting has occurred.

7 PROPERTIES. The properties of the emulsion, when determined in accordance with the methods of test prescribed in Table 1, shall comply with the requirements specified therein for the appropriate grade.

8 SAMPLING. The bitumen emulsion, the bitumen and any oil used in the manufacture of the emulsion shall be sampled in accordance with Appendix B.

9 STABILITY DURING TRANSPORT AND STORAGE. The retention of properties of the emulsion during transport and storage in the original container in an appropriate manner shall be such that, when the emulsion is tested at any time up to 90 days after manufacture, it shall comply with all the requirements of this standard.

NOTE: Containers should be stored away from freezing conditions and rotated head over head at regular intervals of not more than 4 weeks. The contents should be thoroughly mixed before use.

10 MARKING OF CONTAINERS. Each container shall be clearly marked with the following information:

(a) The designation of the emulsion in accordance with Clause 4.
(b) The manufacturer's name or registered trademark.